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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,334	06/09/2006	Tomoya Sugita	28951.1178	4915
53067 7590 01/31/2008 STEPTOE & JOHNSON LLP 1330 CONNECTICUT AVE., NW WASHINGTON, DC 20036				
			EXAMINER PETKOVSEK, DANIEL	
			ART UNIT 2874	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,334	Applicant(s) SUGITA ET AL.	
	Examiner <i>2007 1/25/08</i> Daniel J. Petkovsek	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on application filed June 9, 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/17/08; 8/1/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to the application filed June 9, 2006.

Claims 1-18 are pending.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The prior art documents submitted by Applicant in the Information Disclosure Statements filed on August 2, 2006 and January 17, 2008, have been considered and made of record (note attached copy of forms PTO-1449).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 15 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 15, Applicant claims a "hollow structure", however a liquid is claimed to be sealed in the hollow part. As such, the waveguide can no longer be "hollow", which causes the claim to be vague and ambiguous. Claim 16 is dependent from claim 15.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-7, 11, 14, 17, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Fischer et al. U.S.P. No. 6,939,009 B2.

Fischer et al. U.S.P. No. 6,939,009 B2 teaches (ABS; Figs. 3, 4, 5A, 5B, 6, 7; column 6, line 6 through column 9, line 22) a two dimensional image forming device 100 including plural semiconductor lasers 202, a spatial light modulator (spatially adjustable mask 7, see claim 12) for modulating light outputted from a laser light source, and a lighting optical system for illuminating the output light from the laser source to the spatial light modulator, wherein said laser light course comprises: plural semiconductor lasers 202, and a waveguide 4 for transmitting light, wherein plural laser beams 203 which are emitted from the plural semiconductor lasers and enter the waveguide propagate in the waveguide to be emitted to the outside from an end face 4b of the waveguide, which clearly, fully meets Applicant's claimed limitations of independent claims 1 and 17.

Regarding claim 2, spread angles of light beams are relatively small (frame of reference noted).

Regarding claim 3, the waveguide and spread angle satisfy the inherent relational equation.

Regarding claims 4-7, see Figure 6 in which the waveguide 4 has different cross sectional areas along its width, and the lasers 202 are disposed on the these differences.

Regarding claim 11, the intensities are approximately uniform.

Regarding claim 14, the lasers are arranged in an array.

Regarding claim 18, the image forming device further has a projection optical system 700 for projecting output light from the spatial light modulator (see Fig. 14).

7. Claims 1, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al JP 2001-356404 A.

Suzuki et al JP 2001-356404 A teaches (ABS, Figs.) a two dimensional image forming device including plural semiconductor lasers 1a/1b, a spatial light modulator for modulating light outputted from a laser light source, and a lighting optical system for illuminating the output light from the laser source to the spatial light modulator, wherein said laser light course comprises: plural semiconductor lasers 1a/1b, and a waveguide 5 for transmitting light, wherein plural laser beams which are emitted from the plural semiconductor lasers and enter the waveguide

propagate in the waveguide to be emitted to the outside from an end face of the waveguide, which clearly, fully meets Applicant's claimed limitations of independent claims 1 and 17.

Regarding claim 18, the image forming device further has a projection optical system for projecting output light from the spatial light modulator (see Figs. 1 and 3).

8. Claims 1, 4-7, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Hooker et al. U.S.P. No. 6,554,463 B2.

Hooker et al. U.S.P. No. 6,554,463 B2 teaches (ABS, Figs. 3 and 4) a laser light source 25 comprising: plural semiconductor lasers 14, and a waveguide 12 for transmitting light, wherein plural laser beams which are emitted from the plural semiconductor lasers and enter the waveguide propagate in the waveguide to be emitted to the outside from an end face 43 of the waveguide, which clearly, fully meets Applicant's claimed limitations of independent claim 1.

Regarding claims 4 and 5, the waveguide 12 has a number of step difference portions where the lasers 12 are located on the step difference portions. Regarding claims 6 and 7, the source 18 creates a relatively small (frame of reference) shift.

Regarding claim 11, the intensities are approximately uniform.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 8-10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al. U.S.P. No. 6,939,009 B2.

Fischer et al. U.S.P. No. 6,939,009 B2 teaches (ABS; Figs. 3, 4, 5A, 5B, 6, 7; column 6, line 6 through column 9, line 22) a two dimensional image forming device 100 including plural semiconductor lasers 202, a spatial light modulator (spatially adjustable mask 7, see claim 12) for modulating light outputted from a laser light source, and a lighting optical system for illuminating the output light from the laser source to the spatial light modulator, wherein said laser light course comprises: plural semiconductor lasers 202, and a waveguide 4 for transmitting light, wherein plural laser beams 203 which are emitted from the plural semiconductor lasers and enter the waveguide propagate in the waveguide to be emitted to the outside from an end face 4b of the waveguide.

Fischer et al. '009 does not explicitly teach that the lasers have different oscillation wavelengths (at least three), being in the range of 1nm to 30 nm (claims 8-10); or are multistripe or stacked (claims 12 and 13). At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to use different oscillation wavelengths (at least three), being in the range of 1nm to 30 nm and multistripe/stacked lasers

because Applicant has not disclosed that using different oscillation wavelengths (at least three), being in the range of 1nm to 30 nm or multistripe/stacked lasers provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Fischer et al. '009 to perform equally well with different oscillation wavelengths (at least three), being in the range of 1nm to 30 nm or multistripe/stacked lasers because, to one of ordinary skill in the art at the time the invention was made, these claim terms are easily integrated with the image forming device in the system to provide input for the projection system. Therefore, it would have been an obvious matter of design choice to modify Fischer et al. '009 to obtain the invention as specified in claims 8-10, 12, and 13.

11. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al. U.S.P. No. 6,939,009 B2, applied to claim 1, and further in view of Cohn et al. U.S.P. No. 4,330,761.

Fischer et al. U.S.P. No. 6,939,009 B2 teaches (ABS; Figs. 3, 4, 5A, 5B, 6, 7; column 6, line 6 through column 9, line 22) a two dimensional image forming device 100 including plural semiconductor lasers 202, a spatial light modulator (spatially adjustable mask 7, see claim 12) for modulating light outputted from a laser light source, and a lighting optical system for illuminating the output light from the laser source to the spatial light modulator, wherein said laser light course comprises: plural semiconductor lasers 202, and a waveguide 4 for transmitting light, wherein plural laser beams 203 which are emitted from the

plural semiconductor lasers and enter the waveguide propagate in the waveguide to be emitted to the outside from an end face 4b of the waveguide.

Fischer et al. '009 does not explicitly teach that the waveguide has a liquid sealed therein.

Cohn et al. U.S.P. No. 4,330,761 teaches a waveguide with a laser provided thereto, in which a fluid/liquid core exists in the waveguide. The fluid core allows for improved lasing capabilities.

Since Fischer et al. '009 and Cohn et al. '761 are both from the same field of endeavor, the purpose disclosed by Cohn et al. '761 would have been recognized in the pertinent art of Fischer et al. '009.

A person having ordinary skill in the art at the time the invention was made would have recognized the teaching of Cohn et al. '761, to use a particular liquid/fluid filled waveguide core with mirrored surfaced to improved optical coupling through the waveguide and to decrease optical losses that occur during the reflectivity of a laser source being pumped into the waveguide, in the device of Fischer et al. '009 to improve optical coupling efficiency.

Allowable Subject Matter

12. Claim 16 is objected to as being dependent upon a rejected base claim (15, rejected under 112, second paragraph above), but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. It is noted that the problems associates with claim 15 must be fixed. The prior art of record *does not teach or reasonably suggest* a

cooling mechanism that is connected the waveguide, that which circulates a liquid sealed in a hollow part of the waveguide and the lasers being cooled as such.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: PTO-892 form references A-I.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL J. PETKOVSEK whose telephone number is (571) 272-4174. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Daniel Petkovsek
January 25, 2008



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PRIMARY EXAMINER